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Teachers' beliefs related to secondary school completion: Associations with socio-educational advantage and school level

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Abstract: This research used the responses of 187 Tasmanian teachers to a questionnaire comprising 52- Likert-type items, two multiple choice items, and two open-response items to investigate differences in teachers' beliefs about aspects of schooling related to students' secondary school completion. Exploratory factor analysis of responses to the Likert-type items identified 3 factors underpinning Teachers' responses. These were: 1) Student and parent aspirations, 2) Teacher and school quality and support, and 3) Expectations for continuing education. Two-way ANOVAs showed that primary school teachers scored higher on average than secondary teachers for Student and parent aspirations, and there was an interaction between level of schooling and Index of Community Socio-Educational Advantage (ICSEA) for this factor. Descriptive statistics were used to compare responses to the multiple choice items of teachers at different levels of ICSEA and schooling. Open response items were categorised in two ways: 1) as related to Pastoral, Academic, or Engagement matters, and 2) as negative or positive in relation to each of students, parents, and teachers. The results highlighted less academic and more pastorally focussed cultures in Year 7-10 schools compared with Year 11-12 schools and relatively low expectations for university study across the levels of schooling. The findings implicate teachers' beliefs about students and their families as crucial to influencing educational aspirations and attainment.

Keywords: Teacher beliefs; School completion; Educational aspirations; Socio-educational advantage; School level

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Australian governments have identified improving the educational outcomes of low socioeconomic status (SES) students as crucial to improving overall academic performance (Buddelmeyer, Hanel and Polidano 2011). Among outcomes of concern are rates of school completion that Buddelmeyer et al. (2011) estimated were 65% for low SES students, 78% for medium SES, and 87% for students from high SES families. The cost of early disengagement from education is profound, affecting economic sustainability, social stability, and individual lifelong wealth and health (Steverink, Westerhof, Bode and Dittman-Kohli 2001, OECD 2016). The costs to society through lost productivity, on-going skills shortages, and demands on the health, justice and welfare systems are significant. The link between SES and academic achievement is also well established (Schmidt, Burroughs, Zoido and Houang 2015) and, along with lower student and parental aspirations, has been identified as a contributor to the lower school completion rates of low SES students (Buddelmeyer et al. 2011). Schmidt (2015) identified opportunity to learn (OLT), defined in terms of exposure to curriculum content, as a key determinant of students' achievement. Notwithstanding a national curriculum to Year 10 and state based syllabi, decisions about the content that is taught, and hence students' OLT, lie ultimately with the teacher. The research reported here examined the relationship between teachers' beliefs and SES and suggests that teachers, and hence schools, may be positioned to be more important influences on the educational outcomes of low SES students than is typically acknowledged. The research was guided by the following research questions:

1. What do Tasmanian teachers believe about their schools, colleagues, and students and their families in relation to retaining students in education beyond Year 10?
2. How do these beliefs vary with SES and across the levels of schooling?

The study was conducted in the Australian state of Tasmania, which has particular demographic and education system characteristics relevant to the focus of the study. We begin with a discussion of this context before considering broader theoretical ideas concerning teachers' beliefs and reviewing the literature on their connection with student outcomes.

The Tasmania context of this study

Tasmania has the lowest rates of retention in formal education or training beyond Year 10 of any Australian state or territory (Australian Bureau of Statistics [ABS] 2017a). As a result, there have been ongoing calls for change in the educational culture of Tasmania (e.g., Eslake 2016, West 2013), and the issues associated with it have been well researched (e.g., Abbott-Chapman and Kilpatrick, 2001, Cranston et al. 2016; Kilpatrick and Abbott-Chapman 2002; Watson et al. 2017). Tasmania is the most socio-economically disadvantaged state in terms of household income, population health, adult and youth unemployment, and welfare dependency (ABS 2017a, Eslake 2016, West 2013). The state also has the nation's most dispersed population.

In comparison to other states, Tasmanian young people have a higher than average probability of 'NEET' status "not in education, employment, or training" (Lamb and McKenzie 2001, OECD, 2016). By age 19 years 60% of Tasmanians have achieved Year 12 or equivalent (Lamb et al. 2015). This compares to a national figure of 74% and is lower than all other states and the Australian Capital Territory. In 2011, 10.3% of Tasmanians had attained a Bachelor degree compared with 13.3% nationally (ABS 2017a).

Tasmanian government secondary schools are typically separated into Year 7-10 schools and larger Year 11-12 schools, known locally as colleges and located in larger towns. This system dates from the 1960's when Years 11 and 12 were seen as preparation for university and hence not necessary for most students. Perhaps related to this, Cranston et al. (2016), drawing on case studies of a subset of the schools in the study reported here, identified a stronger academic focus in colleges compared with a more welfare oriented and less academic culture in Year 7-10 schools. The location of colleges has meant that continuing in school beyond Year 10 involves long bus rides or living away from home for many students. A recent government initiative to extend Year 7-10 schools to Year 12 is aimed at addressing this impediment to secondary school completion but at the time of this study, for the vast majority of students, completing Years 11 and 12 required enrolling in a college.

Teachers' belief, defined as anything that the individual regards as true (Ajzen and Fishbein 1980), are recognised as having subtle but powerful impacts on classroom practice (Beswick 2005) and hence the experience of school students. Beliefs are regarded as at the more cognitive end of the spectrum of affective constructs described by McLeod (1992) and typically characterised as difficult to change (Goldin et al. 2016). This has led to teacher beliefs being implicated in the failure of educational reforms such as that of the mathematics problem-solving movement (Roesken, Pepin and Törner 2011). Nevertheless, some researchers (e.g., Liljedahl 2010) have reported rapid change in teacher beliefs and have argued that stability should not be regarded as a defining characteristic of beliefs (Liljedahl, Oesterle and Bernèche 2012). Influencing teachers' beliefs is regarded as necessary to achieving lasting change in teachers' practice but it is also recognised that there is not a linear connection between individual beliefs and particular actions, rather beliefs exist in systems (Beswick 2005).

Many studies concerning teachers' beliefs have used Green's (1971) metaphorical description of belief systems to offer insights into the ways in which an individual's beliefs might interact to influence behaviour (e.g., Francis 2015; Hannula et al. 2016; Haser and Doğan 2012). Of particular relevance to this study are Green's (1971) notions of the relative centrality of beliefs, clustering, and the primary-derivative relationship that can exist between beliefs.

More centrally held beliefs are more strongly held with more connections with other beliefs than less centrally held beliefs making them difficult to influence. Pajares (1992) described a primacy effect whereby beliefs formed earlier in life are likely to most central as they impact the formation of subsequent beliefs. Among the most central of an individual's beliefs are likely to be those concerning themselves since these being to develop from earliest experiences and hence are deeply enmeshed in the individual's belief system. Clustering refers to the propensity for people to hold beliefs in disconnected clusters (Green 1971). Clusters can allow an individual simultaneously to believe contradictory propositions and can arise when beliefs develop in disparate contexts (Green 1971) such as, in the case of teachers, through their own years as a school student, and subsequently during university teacher education. There is also evidence that individuals can create belief clusters in order to avoid the juxtaposition of conflicting beliefs. In the examples reported by Beswick (2012), teachers

were able simultaneously to hold conflicting beliefs about mathematics as a discipline and as a school subject. Derivative beliefs are logical consequences of other, primary, beliefs. Changing a primary belief has implications for derivative beliefs and, conversely, a derivative belief may be very resistant to change if the primary belief from which it follows is not challenged. Beliefs can also vary according to the basis on which they are held. Some, for example, are believed because they were espoused by an authority figure whereas others are based on evidence (Green 1971). Only the latter are susceptible to influence by evidence.

Teachers' beliefs and the aspiration and academic outcomes of students

Teachers' aspirations for their students concern their beliefs about the kinds of futures that are open to and appropriate for them. Those beliefs are likely to be derivatives of beliefs about students' capabilities. They influence the curriculum teachers deliver, the expectations they set and, hence, the opportunities and aspirations of students. Students can discern the beliefs that their teachers have about them (Archambault, Janosz and Chouinard 2012) and hence teachers' aspirations for their students influence the aspirations of their students (Byun, Meece, Irvin and Hutchins 2012). Archambault at al. (2012) cited research showing that when teachers believe their students can learn, students are more engaged, feel more capable, work harder and achieve better than if their teachers have negative beliefs about them. Reddy, Rhodes and Mulhall (2003) found that students' perceptions of the extent to which their teachers were interested in and available to them, predicted students' engagement, the extent to which they valued school, were behaviourally well adjusted, and motivated, and succeeded academically. It is reasonable to expect that teachers are more likely to make themselves available to and show an interest in students whom they believe have potential to succeed and hence supportiveness may be a way in which teachers convey their expectations of and aspirations for students. Reddy et al. (2012) also reported that students' perceptions of teacher support (conceptualised as "a subjective sense of relatedness" (p. 120)) tend to decline over the middle years of schooling.

Teachers in schools in low socioeconomic areas are less likely than teachers in high socioeconomic areas to have positive beliefs about their students' capacity to learn and hence students who struggle in

these schools are less likely to receive the support they need to succeed (Archambault et al. 2012; Reddy et al. 2003). These findings are consistent with Schmidt et al.'s (2015) findings based on Programme for International Student Assessment (PISA) data, that underachievement is in large part related to opportunity to learn (OTL). They found a strong direct relationship between OTL and mathematical literacy achievement, and that students from high SES backgrounds received more rigorous OTL than their low SES peers even within the same school. That is, the extent to which students were exposed to curriculum content varied according to their SES backgrounds with those from low SES backgrounds having less OLT. In Australia, more than half of the within-school effect of SES on performance was mediated by OTL, and Australia and other English-speaking countries (i.e., the UK, Canada and New Zealand) have among the highest levels of within school variation in OTL (Schmidt et al. 2015). The fact that OLT varies within schools suggests that individual teachers may play a role in determining the opportunities that their students have to learn.

At the individual classroom level there is evidence that teachers sometimes make judgements about their students' abilities based on spurious evidence. For example, Beswick (2017) reported that teachers tend to identify students who struggle with mathematics with lack of basic fact knowledge, negative attitudes, disruptive behaviours, and poor work habits and attendance, none of which necessarily implies inability to learn mathematics. Furthermore, teachers believe that these students need accessible tasks with which they are likely to experience success and that match their interests. Although almost certainly well-intentioned, such teaching amounts to restricted opportunities to demonstrate higher order mathematical thinking (Beswick 2017) even though there is evidence that low attainers can exhibit such thinking if provided the opportunity to exhibit it (Watson 2001). Beliefs of this kind likely underlie the often differing teaching approaches that teachers adopt for different classes (Watson 2001) even when the classes are supposedly undertaking the same course of study (Schmidt et al. 2015). Teachers tend not to believe that lower attaining students should be expected to learn mathematics in the same ways as higher achievers, but need more step-by-step algorithmic approaches (Beswick 2017, Watson 2001).

Both Beswick (2017) and Watson (2001) researched mathematics teachers and Schmidt et al. (2015) used students' performance on PISA mathematical literacy as their measure of achievement. Using mathematics (or literacy) achievement as a proxy for general achievement is common and related in part to the availability of international comparative studies such as PISA, which have been taken by many governments, including Australia's, as indicative of the performance of their educational systems. National testing regimes, such as Australia's National Assessment Program – Literacy and Numeracy, similarly tend to focus on mathematics (or numeracy) and literacy, and low achievement in reading and mathematics is regarded as a predictor of school dropout (e.g., Cratty 2012). In Australia Lamb, Jackson, Walstab and Huo (2015) found that only half of the lowest achievers in mathematics at age 15 had completed Year 12 or equivalent by age 19. A further reason that mathematics achievement might be particularly relevant to school completion is that both mathematics teachers (more than teachers of other subjects) and students tend to believe that mathematics achievement is a consequence of innate ability or lack thereof (Jonsson, Beach, Korp and Erlandson 2012), and that mathematics achievement "operates as a proxy for intelligence" in society in general (Gutiérrez 2017 p. 18).

Although individual teachers can positively influence student engagement and achievement by offering support, significant change in students' engagement and academic achievement require multiple positive experiences of improved teaching (Archambault et al. 2012). School level factors and the ways in which they support and interact with the beliefs of individual teachers therefore need to be considered. MacNeil, Prater and Busch (2009) defined culture as shared values and norms, and identified principals as key to establishing a strong teaching and learning culture in their schools. They argued that teachers in such cultures are more motivated, set higher academic standards, and consequently students learn better. MacNeil et al. (2009) stressed the importance of positive relationships between principals, teachers, students and parents for creating the kind of school learning culture in which students perform well academically. Teachers in such schools are likely to have positive beliefs about the school, their colleagues, their students, and the wider school community including parents.

Whole of school, system and national approaches (e.g., the National Numeracy Strategy in the UK (Brown, Millett, Bibby and Johnson 2000); the Australian Curriculum (Sullivan 2012)) to enhancing

academic achievement have been recognised as necessary to effect large scale change. Along with national and systemic initiatives there has been increasing focus on teacher collaboration, often conceived of as professional learning communities (e.g., Jäppinen, Leclerc and Tubin 2016). Hodkinson and Hodkinson (2004), however, pointed to the importance of the dispositions (i.e., beliefs) of individual teachers in relation to the ways in which they learn in such contexts.

Methods

This study employed a combination of quantitative and qualitative methods to analyse teachers' responses to a survey seeking their perceptions of factors that influence students' educational aspirations and completion of secondary schooling. It was part of a larger study that also examined the perceptions of students and community members (e.g., Watson et al. 2017).

Socio-educational advantage variable

In this study we used the Index of Community Socio-Educational Advantage (ICSEA) score as the measure of SES. The ICSEA score of a school is closely related to the SES of its students. ICSEA is a measure of the average relative educational advantage of students attending a school created by the Australian Curriculum, Assessment and Reporting Authority (ACARA) to facilitate the identification of schools serving similar student cohorts and thus facilitate fair comparisons of student achievement as measured by the national standardised tests of literacy and numeracy (ACARA 2013). ICSEA takes account of family and school characteristics known to be associated with students' educational attainment such as parental occupation and education, school location (i.e. degree of remoteness), and the proportion of Indigenous enrolments (ACARA 2013). The mean ICSEA value for Australian schools is set at 1000 with a standard deviation of 100 (ACARA 2013). ICSEA values range from approximately 500 (extremely disadvantaged) to about 1300 (very advantaged) (ACARA 2013). Tasmanian schools have ICSEA values skewed towards the lower end of the national distribution. For example, in 2017, the median ICSEA for Tasmanian schools was 738-1154 with a median of 962. For the schools in this study at the time of the survey, the range was 821-1023 with a median of 921 and

hence not unlike the schools in the state generally in terms of ICSEA. Schools were classified as Low ICSEA if their score was less than or equal to the median, and High ICSEA if their score was above the median.

Instrument

The survey comprised demographic questions about respondents' teaching experience, current roles, and school context, along with 52 Likert-type items requiring responses on 5-point scales from Strongly Disagree to Strongly Agree. The Likert-type items were developed in conjunction with surveys for students and community members as part of the larger study. Each of the surveys covered dimensions derived from the literature concerning influences on students' completion of secondary education as described by Cranston et al. (2012) and Beswick et al. (2012). These were *Engagement with schooling* (e.g., Education is important to the school community); *Connection with school curriculum* (e.g., Students at this school understand the school work they do); *Relationship with teachers* (e.g., Teachers at this school are interested in their students); *Teacher aspirations* (e.g., Teachers at this school have high expectations of their students); *Parental aspirations* (e.g., Parents/guardians of students at this school want their children to stay at school after Year 10); *Academic self-concept* (e.g., Students at this school think they are as good at English/ Literacy as students at any other school); *School culture* (e.g., Innovations to inspire student learning are encouraged at this school); *School organisation/administration* (e.g., The school day start and finish times work well for students at this school); *Physical environment* [of school] (e.g., This school has good learning facilities); and additional items concerning such things as the cost of education and travel to and from school (e.g., The cost of further education will stop students at this school from going on). Career aspirations in the student survey was replaced with Education aspirations (e.g., Education beyond Year 12 is a realistic pathway for students at this school) for the teacher survey. Items were adapted from existing surveys such as the Longitudinal Surveys of Australian Youth (Khoo and Ainley 2005) and the Program for International Student Assessment (Willms 2003). The 40 items that were included in the factor solution are shown in Appendix A.

Two multiple-choice questions asked teachers to choose one of five categories that represented the proportion of the current student cohort at their school that they thought would do a trade qualification/Apprenticeship, or go to university. In both cases the response options were: Less than 5%, 5-20%, 21-40%, 41-60%, and More than 60%. The survey also provided two opportunities for teachers to provide open responses. The first was in response to the question, "What does your school currently do to support and encourage students to continue with their education past Year 10?" and the second, at the end of the survey, was an invitation to share anything else that they believed to be of interest/benefit to the project. In both cases the amount of text that could be entered was unlimited and in the case of hard copy surveys, use of the back of the page, if additional space was needed, was suggested.

Participants

Respondents comprised 187 teachers from 40 government schools in the Australian state of Tasmania. Schools were selected for inclusion in the study based on their rural or regional setting, or were inner regional schools for which the other rural or regional schools were 'feeder' schools (ABS 2013). Of the 187 teachers, 58 were male and 129 female, 67 taught in primary schools (Years K-6) and 120 taught in secondary schools. The secondary teachers taught either in schools catering for Years 7-10 (89 teachers) or schools catering for Years 11 and 12 (31 teachers). Of the 187 teachers, 108 (45 primary and 63 secondary) were teaching in low ICSEA schools whereas 63 (22 primary and 41 secondary) were teaching in high ICSEA schools. ICSEA values were not available for the schools in which 16 of the teachers were teaching. These schools were all secondary schools catering for Years 11 and 12 only. Relatively few teachers (27) provided responses to the open-ended question about the measures currently provided in their school to increase retention beyond Year 10. In addition to the fact that composing a response to an open question requires more time than selecting from options or responding on Likert-type scales, it could be that many teachers were not aware of school level measures, or have not felt able to comment authoritatively if they were not directly involved in such initiatives.

Data analysis

The Likert-type data were subject to principal component factor analyses aimed at identifying the minimum number of underlying variables that could account for the maximum amount of the total variance present in the responses to the survey items (Hair, Black, Babin, Anderson and Tatham 2006). Varimax rotation was selected to achieve the simplest and most readily interpretable solution possible comprising independent factors that could be used in subsequent analysis (Hair et al. 2006). In accordance with Hair et al.'s (2006) recommendations, the number of factors extracted was determined by a combination of discarding factors with eigenvalues less than 1, eliminating coefficients below 0.4, and remove items with non-simple factor structure. The final analysis yielded a 40-item exploratory factor analysis (EFA) (refer to Appendix A) with three factors that was consistent with items being factorable (KMO = 0.889) and adequately correlated (Bartlett's test: $p<.0001$).

The median ICSEA of schools in which participating teachers taught was 922. Teachers were divided into two groups, Low (School ICSEA ≤ 921) and High (School ICSEA ≥ 922), according to the ICSEA value of the school in which they taught. A two-way analysis of variance (ANOVA) was used to determine whether factor scores differed according to school level (Primary of Secondary) or ICSEA (Low or High). Medians and modes were calculated for responses to the two multiple-choice questions. In this case three levels of schooling (Primary, Years 7-10, and Years 11-12) were distinguished.

Consistent with processes described by Miles and Huberman (1994), responses to the open question about current school measures aimed at improving retention were first coded according to the type of initiative. These codes were then grouped into categories which were subsequently grouped into three broader categories or themes, which were examined for patterns across school types. Numbers of comments by teachers at each level of schooling (Primary, 7-10, 11-12) that fell into each of the broad categories were counted to provide an indication of the relative emphasis upon each type of measure at the various levels of schooling.

The responses to the final question inviting respondents to add anything further were similarly thematically analysed. Then, responses that included a mention of any of students, parents or teachers

were classified according to whether they were positive or negative about each of those groups. Numbers of positive and negative references to each of students, parents and teachers were counted for each of Low and High ICSEA schools and for each level of schooling (Primary, Years 7-10, and Years 11-12). By assigning 1 to a positive comment, and -1 to a negative comment, a single score was obtained for each category that reflected the overall tenor of the teachers' comments about each group.

Results and interpretation

In the following sections results of the factor analysis and subsequent two-way ANOVA are presented along with their interpretation. The results of the analysis of responses to open-ended question about measures in place to encourage and support retention beyond Year 10, and the opportunity provided at the end of the survey to add anything further are then presented in turn.

Factor structure of the survey

Exploratory factor analysis of the teachers' responses to the 52 Likert-type items resulted in a 3-factor solution involving 40 items. Each factor had acceptable reliability as measured by Cronbach α. The factors were; 1. Student and parent aspirations (19 items, $\alpha = 0.925$), 2. Teacher and school quality and support (16 items, $\alpha = 0.907$), and 3. Expectations for continuing education (5 items, $\alpha = 0.634$). The rotated component matrix is provided in Appendix A.

Differences according to ICSEA and School level

The ANOVA showed a significant main effect of ICSEA for the factor, Student and parent aspirations ($F(1, 175)=3.994$, $p<0.05$, partial $\eta^2=0.022$), with teachers in Low ICSEA schools on average rating Students and parents aspirations lower than did their colleagues in High ICSEA schools. There was a significant interaction between ICSEA and School level for the same factor ($F(1, 175)=4.361$, $p<0.05$, partial $\eta^2=0.024$): secondary school teachers' mean score differed more with ICSEA than did primary teachers'. There were no significant main effects or interactions for either Teacher and school quality and support, or Expectations for continuing education.

Teachers' beliefs about students' likely post-school educational destinations

Table 1 shows the median response for teachers at each level of schooling (primary (*n*=67), Years 7-10 (*n*=89) and Years 11-12 (*n*=31)) and ICSEA to the question, "What percentage of the current cohort of students at your school do you think will go on to university?" Primary teachers across both ICSEA levels and 7-10 teachers in low ICSEA schools expected relatively few of their students to go to university. Even in high ICSEA Year 11-12 schools that have been found to have a more academic culture than Year 7-10 schools (Cranston et al. 2016) the percentage expected to attend university is still reasonably low. The modal category for this question for both primary and Year 7-10 teachers was 5-20%, but was 21-40% for Year 11-12 teachers.

Table 1: Median categories for, "What percentage of the current cohort of students at your school do you think will go on to university?"

	Low ICSEA	High ICSEA
Primary	5%-20% (n=45)	5%-20% (n=22)
7-10	5%-20% (n=63)	21%-40% (n=25)
11-12	NA (n=0)	21%-40% (n=16)

The median response for teachers at each level of schooling (Primary, Years 7-10 and Years 11-12) and ICSEA to the question, "What percentage of the current cohort of students at your school do you think will go on to do a Trade qualification/ Apprenticeship?" was 3. The modal category for this question was 21-40% for teachers at all school levels. Taken together the responses of these Tasmanian teachers across primary and Year 7-10 schools and regardless of ICSEA suggest that they expected more of their students to take up trades/ apprenticeships than to study at university. Similarly, the differences for teachers' mean scores for the factor, Student and parent aspirations, and their beliefs about the proportions of students who would attend university or pursue a trade qualification suggest that the relatively little variation with ICSEA of primary teachers' beliefs about students and parents aspirations might be due to overall low aspirations of these teachers for their students.

Current initiatives to encourage retention beyond Year 10

Twenty-seven teachers responded to the question, "What does your school currently do to support and encourage students to continue with their education past Year 10?" In all they mentioned 50 measures. Of these the most commonly mentioned emphasised the importance of education and/or its benefits, particularly in terms of getting a job (8 responses in total). Four responses included reference to high expectations, whereas three referred to each of inviting speakers such as past students who had gone to university, making students aware of options, encouraging students to aim high, encouraging parents to support their children's education, encouraging students to be lifelong learners, following up on absences, and talking as if all students would continue their education. Two teachers referred to unspecified encouragement of students and two also mentioned each of collegial support processes for students who need it, and liaison with the next or previous school. The latter two were from a teacher at a Year 11-12 school and a teacher at one of that school's feeder 7-10 schools. The following measures received one mention each: providing academic rewards; encouraging students specifically to continue their schooling; discussions; pastoral care; affirming all options; visits to the university; teachers' influence; supporting a positive image of students' abilities; building literacy, numeracy and social skills; offering flexible study options; and providing tutorials.

The measures mentioned were grouped into three categories: Encouragement, Pastoral support, and Academic support. Table 2 shows the numbers of comments that fell into each of these categories by teachers' school level along with the percentage of comments from teachers at each level that fell into each category. Secondary teachers (Years 7-10 and Years 11-12) reported measures of a pastoral nature at more than four times the rate of their primary colleagues, but were half as likely to report measures that were classified as Encouragement. The number of comments related to academic measures was too few across all groups for meaningful comparison.

Table 2. Current school efforts relating to retention by school level of teachers

	Primary	Year 7-10	Year 11-12	Examples

Pastoral	3 (12%)	7 (58%)	6 (46%)	• Close liaison with X College. All pupils do go on; • Working hard to change the community cultural attitude toward school 'finishing' at the end of Year 10 with newsletter articles etc.; • Work very hard encouraging the students to think carefully about the subjects in which they may be interested, … to speak with their parents and current teachers about subject choices … if the student is struggling, we would ascertain whether this was because of lack of commitment to the subject, … or whether there was some other reason such as personal problems at home.
Academic	1 (4%)	1 (8%)	2 (15%)	• Assemblies to reward academic achievement; • Internal study extensions, tutorial available to support out of class time; • Flexible Learning is an alternative offering to support students who won't or can't come to college.
Encouragement	21 (84%)	4 (33%)	5 (38%)	• Encourage the students to be the best they can be in everything they do; • Teacher's influence;

				• Talk to students about our continual learning as teachers and adults; • Positive affirmation by teachers for both uni and other options.
Totals	25	12	13	

Overall, these results suggest that measures in place aimed at improving rates of school completion had a greater focus on pastoral care in secondary schools compared with primary schools, and that there was a lack of focus on academic support across all levels of schooling. This is in spite of the established link between literacy and numeracy competence and high school completion (Cratty 2012).

Teachers' beliefs about students, parents, and other teachers

Twenty-two teachers provided additional comments at the end of the survey. These comprised eight teaching in primary schools (three Low ICSEA and five High ICSEA), nine in Year 7-10 schools (seven Low ICSEA and 2 High ICSEA), and five in Year 11-12 colleges (two High ICSEA and three with no ICSEA available). The comments related mainly to parents (14 comments), students (14 comments), and teachers (8 comments). Only two comments did not include a mention of one of these groups. Three comments related to the community or context of the school, and there were one or two comments about each of principals, school system priorities, Tasmanian school structure, programs offered in the school, and travel issues for students. In the paragraphs that follow, quotations are followed by a teacher code, the school type, and ICSEA level all in parentheses.

Comments about parents and about students were approximately evenly divided between being favourable and being negative or blaming. Two teachers identified two distinct groups of parents – those perceived as supportive of their child's education and those who were not. In each case, these teachers linked two categories of students (engaged and doing well, or not engaged or doing well) with parental support.

> Many parents are supportive and concerned that their children do well academically … We have a fairly large group of students who are chronic non-attenders and are not interested in thinking about or planning for further education and this attitude is compounded by home and family attitudes. (T2, 11-12, High)

> Parents of successful students encourage homework/assignments/study to be completed and take time to help their children with this work. Students in low level subjects of core learning areas (maths, literacy, science) tend to not have this parental support, in contrast with students in higher level subjects. (T7, 11-12, High)

Negative comments about parents are exemplified by the following in which some parents are seen as an influence on students that the school needs to work to counter. Transient families were also seen as problematic.

> Some parents should be more involved in the education of their children. Also, some students have very low expectations of themselves because their parents have informed them they can't achieve much. … Sometimes, telling them things that are different from what their parents/carers have been telling them can be very challenging. Over a period of time, there are some positive changes but it does take time and persistence to get results. (T4, 7-10, High)

> The problems lay within the disengaged/dysfunctional families that temporarily live here, and their disinterest to the importance of education. (T5, Primary, Low)

One respondent was entirely positive about parents.

> I believe all the families value education as providing for future pathways for their children. There is sometimes a balance between competing factors such as working as a primary producer and taking part in additional studies but many of these parents have demonstrated to their children that this can be done. (T3, Primary, High)

Overall students were regarded as successful or not depending upon their motivation, their parents, or their ability. Comments about students also tended to identify categories. The following example did so most explicitly.

> This college has at least 3 distinct groups 1. those that will go on with further education at Uni 2. those that will look for an apprenticeship or go to the trades area 3. or those that are at school for socialisation and will only ever get limited work, if at all due to their limited abilities. (T13, 11-12, No ICSEA)

One teacher regarded students as either motivated or not, whereas another aligned motivation with gender, with boys seen as "anti-literacy and pro-physical activity in a very strong way. … quite negative about schooling in general" (T16, Primary, High).

Negative comments about teachers include reference to expectations of students, lack of commitment, passion, and innovative pedagogy.

> I am concerned that our expectations are not high enough for our students, their work and abilities. (T17, 7-10, Low)

> Some teachers at this school currently do not have the passion for these goals to occur; without their dedication and commitment to the 're-building' of our school, this will not occur. (T18, 7-10, Low)

> Innovative and up to date teaching is virtually unknown in this college. (T21, 11-12, No ICSEA)

Two comments positioned teachers as doing their best but either unable to have much impact or resigned to benign acceptance.

> We do our best to enthuse them but we must accept we don't always win on this one. (T20, 11-12, No ICSEA)

> Whilst not all students may go on to further education, we will still value them as important members of the community in which they live. (T22, Primary, High)

Another commented, "the standards for teachers (and therefore students' education) are increasing dramatically" (T19, 7-10, Low). The basis of this belief was not provided but it could be a reference to the government measures, including a foreshadowed test of the literacy and numeracy of all graduating

teachers, intended to ensure that teachers were drawn from the top 30% of literacy and numeracy achievement in the Australian population. If so, allowance had not been made for the time required to implement such a measure and for graduates under a revised regime forming a significant part of the teaching workforce.

Three comments related to the community and broader social context of schools.

> [There are] many families whose parents work within local industry and would have completed apprenticeships themselves in a particular trade. Also, there are a number of families who are unemployed and the cycle of poverty continues. (T6, Primary, High)

> Our students are vulnerable to many social pressures and many are independent livers by the time they are in Grade 10 and above. (T17, 7-10, Low)

> [School name] is a small, rural and remote school. At times travel can be difficult as children progress further in their education. TAFE/Vet and apprenticeships seem to be the most likely choice for students as they further their education, due to wanting to stay close to the local … area and cost. (T9, Primary, High)

The last of these comments raised the issue of distance to schools in larger centres for secondary education. It also highlights the tension between wanting to stay in one's community and wanting to pursue education. Staying was equated with 'settling' for vocational options, while furthering one's education was assumed to require leaving the community. The only specific program mentioned was vocational. This teacher noted that "trade training is highly thought of in the school community". (T12, 7-10, High)

Two teachers commented on the structure of secondary schooling in Tasmania. Both regarded it as problematic with one (T10, Primary, Low) attributing lack of retention at least in part to the "break between Years 10 and 11", and the other drawing attention to the difference between Tasmania and other states in this regard, connecting it with academic achievement, and highlighting the detrimental impact of events traditionally associated with the end of Year 10. He said:

> On the whole, the split system of 7-10 and then faux colleges from 11-12 is very, very bad for Tasmanian schooling. I have taught in three other mainland states, and the Tasmanian system is deeply, deeply flawed. It is a non-achievement for year 10s to celebrate 'leaving school' when they are incomparable academically to their mainland peers. We need 7-12 schools as a starting point to catch up to the rest of the nation. (T9, 7-10, High)

To assist with identifying patterns in teachers' responses to this open-ended question, Tables 3 and 4 show the results for each of students and parents of scoring positive comments as +1 and negative comments as -1, and then tallying the scores for each level of schooling and for Low and High ICSEA schools. Blank cells indicate that no comments were made that fitted that category. In each case, *n* indicates the total number of comments that related to that column or row.

Table 3. Additional comments related to students

	Low ICSEA (n=4)	High ICSEA (n=4)	No ICSEA (n=3)
Primary (n=2)		0	
7-10 (n=5)	-4	1	
11-12 (n=4)		-1	-3

Teachers described students most negatively in Year 7-10 low ICSEA schools, whereas in high ICSEA schools, teachers provided both positive and negative comments. All three of the comments from teachers in schools without an ICSEA score (these were Year 11-12 schools) were negative: Students were characterised as having "limited abilities", being "non-attenders", and "would have left school [before attendance beyond Year 10 was required]". Teachers in low ICSEA 7-10 schools described many of their students as lacking goals, having low self-esteem and low expectations of themselves, and being vulnerable to social pressures, unmotivated, and from unsupportive families. These data are consistent with Archambault et al.'s (2012) conclusion that students from low SES backgrounds perceive less support from their teachers.

Table 4. Additional comments related to parents/families

	Low ICSEA (n=3)	High ICSEA (n=8)	No ICSEA (n=2)
Primary (n=5)	-1	0	
7-10 (n=4)	-2	-2	
11-12 (n=4)		0	0

Comments about parents and/or families were mixed with just a few more negative than positive. They related to the extent to which they believed parents were supportive of and engaged with their children's education, and valued education. As noted earlier there was one reference to "dysfunctional families" (Primary, Low) and another that characterised the messages students received from home as having to be countered by the school (7-10, Low).

Teachers made six comments about their colleagues. Three negative comments all concerned teachers having insufficiently high expectations of students and all were from teachers in low ICSEA schools, of which two were in Year 7-10 schools. The three positive comments described teachers as trying "really hard to help students" (Primary, Low), raising expectations of students' behaviour (7-10, Low), and doing their best to enthuse students in "low level subjects" (11-12, High).

Teachers' responses to the invitation to add anything further were consistent with the measures they reported as currently being in place to support school completion. That is, in Year 7-10 schools there was considerable concern for students' wellbeing issues that suggest a pastoral focus to interventions. In addition, however, these comments suggest that by Year 11-12 students are considered to be 'academic' or not with the distinction attributable to parents and families and hence beyond the influence of teachers or schools.

Discussion and conclusion

The factor analysis of the Likert-type items showed that in secondary schools (Years 7-10 and 11-12) the beliefs of teachers about the educational aspirations of students and of those students' parents were related to ICSEA with students and their parents from high ICSEA schools considered to have higher aspirations. Responses to the multiple-choice items about likely post-school study confirmed the

connection of teachers' beliefs about their students' aspirations from the Likert-type items in the case of teachers in Year 7-10 schools. Teachers in all contexts, apart from the high ICSEA Year 11-12 schools, were more inclined to believe that students in their school would pursue a vocational pathway than university study. Halsey (2018) noted an inverse correlation between remoteness and the proportion of 25-34-year-olds with bachelor degrees, but that rates of vocational education training (VET) in metropolitan and non-metropolitan Australia are comparable. In fact, completion rates for Certificate 3 qualifications are greater in non-metropolitan locations. The opposite is true, however, for Diploma level VET qualifications. In Tasmania, and elsewhere, rurality and low socio-economic status exist together. The findings of this study indicate that teachers' beliefs about the appropriateness of different educational pathways and hence the expectations that they convey to students according to their socio-economic background cannot be ignored in attempts to address inequities in educational outcomes.

The comments that the teachers made in response to the two open-ended items provided further insight into the teachers' beliefs. They confirm Cranston et al.'s (2016) finding concerning the emphasis on pastoral care in Year 7-10 schools, and provide some evidence in support of their claim of a more academic focus in Year 11-12 schools. The additional comments suggest that in Year 11-12 schools there is bifurcation in the beliefs of teachers about students and the parents of those students, with teachers expressing positive beliefs about students enrolled in academic courses and less positive beliefs about those pursuing vocational studies. This latter group was the focus of pastoral interventions at this level.

The location of the source of secondary students' academic difficulties with the students themselves and their families can be understood as a protective move on the part of teachers: It is necessary for them to maintain belief in themselves as effective or "good" teachers in the face of students who are not succeeding. Belief in oneself as a "good" teacher who helps students to learn is likely to be a central belief, strongly connected to other beliefs that teachers have about themselves and their identities. The challenge of evidence can be dealt with by creating separate clusters (Green 1971) for beliefs about themselves as teachers and about reasons for students' difficulties. Clustering in this way prevents the

contradictions among these beliefs from being noticed or acknowledged. Consistent with this, emphasising the non-academic difficulties of students and focusing on pastoral rather than academic interventions allows teachers to believe that they are doing a good job.

Overall low academic expectations are likely to derive from negative beliefs about students' capabilities to learn. As Green's (1971) description of belief systems suggests, efforts to raise teachers' academic expectations are unlikely to be successful unless underlying or primary beliefs about students' abilities are challenged. The connection between secondary school teachers' beliefs about students and parents and school ICSEA suggest that even deeper beliefs may underlie the belief that some students are not academically capable. These may include the belief that poorer people in general are less academically capable and, consistent with Beswick's (2017) findings about mathematics teachers, relate to their beliefs about how ability is manifested in classrooms. That is, teachers associated low ability with negative behaviours such as disorganisation and unwillingness to work. It is established that behaviours considered problematic are more common among students from low SES backgrounds (McGrath and Elgar 2015) and this could be interpreted as lack of ability and hence contribute to lower teachers' lower academic expectations of low SES students.

The results suggest that the Year 7-10 schools in this study did not have strong learning cultures as described by MacNeil et al. (2009). Indeed, our findings suggest that these schools are sites of considerable negativity among teachers in relation to students and their families. Systems and school principals need to support teachers' wellbeing and professional satisfaction (Archambault et al. 2012) by helping them to produce evidence of their efficacy in terms of student outcomes (especially academic). Producing this evidence will require that students, regardless of their SES, prior attainment or superficial behaviours, are afforded better OTL (Schmidt et al. 2015). Enhancing OTL will require serious and sustained attention to issues such as the relative lack of specialist teachers in rural Australia (Alloway and Dalley-Trim 2009) and for all concerned to believe without caveat that all students are entitled to access the full curriculum in ways that allow them to develop and demonstrate the highest levels of achievement.

Teachers, especially in rural areas, tend to live in and be a part of their local communities, sharing or acquiring to a greater or lesser extent the community's beliefs that are not always supportive of education (Watson et al. 2017). In particular, this has implications for strategies characterised as "growing your own" teachers (Hardre 2009) where graduates of hard to staff schools, often rural, are encouraged to return to the area in which they grew up, to teach once they graduate. Given the relative rarity of such teachers it is likely that they have developed from childhood, central beliefs about themselves as exceptional in their locality. Rather than returning determined to inspire students generally to do as they have done, ongoing and resilient belief in their own exceptionality is likely to contribute to them seeing university education as appropriate only for the exceptional few. Interestingly, the most scathing critique of some of the structural features of Tasmanian secondary schooling was made by a teacher (T9, 7-10, High) who reported having taught in three Australian states other than Tasmania.

The expectations of schools and even education systems cannot be addressed separately from the communities in which they operate. Improving educational outcomes in Tasmania is not a short-term undertaking but nor is it an impossible goal but it will take attention to more than just structural and legislative matters Considering in-depth the beliefs that underlie teachers' practices that perpetuate differential OTL and challenging them with evidence and support to change, consistently over time appears to offer a way forward that is relevant in rural areas across Australia and beyond.

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Appendix A

Rotated Component Matrix

	Component		
	Students and Parents	Teachers and School	Continuing Education
Ability grouping is used at this school/college.	.439		
Students at this school/college are encouraged to be involved in sports, clubs and other activities, e.g., music, drama, chess.	.444		
It is important for students at this school/college that they continue their education past Year 10.	.473		
Students at this school/college have the opportunity to be involved in sports, clubs and other activities, e.g., music, drama, chess.	.478		
Students at this school/college work hard in Mathematics/Numeracy.	.599		
Students at this school/college work hard in English/Literacy.	.599		
Students at this school/college have a realistic understanding of their academic ability.	.606		
Students at this school/college are well prepared for the next stage of their schooling or education.	.613		
Education is important to the school/college community.	.627		
Education is important to the students at this school/college.	.644		
Parents/guardians of students at this school/college want their children to keep studying after Year 12.	.658		
It is important to students at this school/college that they continue their education past Year 12.	.675		
Parents/guardians of students at this school/college encourage their children to do well at school/college.	.677		

Parents/guardians of students at this school/college take an interest in their children's progress at school/college.	.686	
Students at this school/college think they are as good at English/Literacy as students at any other school/college.	.688	
Parents/guardians of students at this school/college want their children to stay at school after Year 10.	.695	
Students at this school/college see themselves as being good at their work.	.720	
Students at this school/college think they are as good at Mathematics/Numeracy as students at any other school/college.	.744	
Students at this school/college get high grades/marks on their work.	.781	
The start and finish times work well for students at this school/college.		.447
Students are not bullied at this school/college.		.473
Parents/guardians are encouraged by this school/college to be involved in their child's learning.		.478
When the students are not in class there are good places at this school/college for them to spend time with their friends during breaks.		.569
The school/college timetable works well for the students at this school/college.		.590
Teachers at this school/college have high expectations of their students.		.598
Innovations to inspire student learning are encouraged at this school/college.		.605
This is a safe school/college for students.		.630
This is a good school/college.		.648
This school/college has good teachers.		.652
Teachers at this school/college listen to their students.		.709
Teachers at this school/college are interested in their students.		.756

Teachers at this school/college treat their students with respect.	.767	
At this school/college, teachers and students have good relationships.	.768	
Teachers at this school/college help their students learn.	.803	
Teachers at this school/college support their students.	.820	
Teachers at this school/college encourage their students to keep studying after Year 12.		.472
Students at this school/college are given good advice on the next stage of their schooling or education.		.544
Polytechnic is a realistic pathway for students at this school/college.		.546
Education beyond Year 10 is a realistic pathway for students at this school/college.		.608
Doing an apprenticeship is a realistic pathway for students at this school/college.		.664

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.